

June 12, 2015



Update on Leatherjackets

Leatherjackets, the larvae of crane flies, can cause serious damage to new plantings of forage grass stands in some years. This seems to be one of those years, and several Fraser Valley dairy producers found their new plantings decimated in the spring. Damage is caused by the larvae feeding on roots, stems and leaves of forage grass, resulting in yellow to brown patches, and ultimately in complete loss of heavily infested areas.

Of the several species of crane flies that live in the Fraser Valley, *Tipula paludosa* is the worst at causing damage to your grass stands. Native to northwestern Europe, *T. paludosa* was first found in Newfoundland and Cape Breton in the early 1950s, where it was thought to have been brought ashore in dumped soil that had been used for ship ballast. By 1974 leatherjackets were known to be widely distributed over the Fraser Valley.

Crane flies, the adult stage of Leatherjackets, are large, gangly flies that fly erratically and relatively slowly (Figure 1). Their larvae are the stage in this insect's life cycle that cause damage by feeding on roots and crowns. Larvae are light grey or brown with irregular black specks. They appear cylindrical but taper slightly at both ends and are legless. Larvae mature through four developmental stages called instars. They range in size from 0.5 cm in length in the first instar to 3–4 cm at maturity (Figure 2).

Adult *T. paludosa* crane flies lay eggs in late summer or early fall. These eggs hatch and become young larvae which feed on the roots and crowns of grass during the rest of the fall, although you may not notice in established forage stands at this time. Mature, well-established grass stands are generally able to survive feeding damage. These larvae overwinter, and in the spring the much bigger larvae continue to feed. It is at this time that new grass plantings are very susceptible to high leatherjacket populations. *T. paludosa* have one generation per year in the Fraser Valley (Figure 3). Other species, such as *T. oleraceae*, have two generations per year. This can cause some confusion, as adult crane flies of other species do not necessarily represent a problem. It is not clear how much damage is caused by other species, but we do know for sure that *T. paludosa* causes significant and "economic" damage.



Figure 1: Adult crane fly.



Figure 2: Leatherjacket larva.

Figure 3: Life cycle of *T. paludosa*.

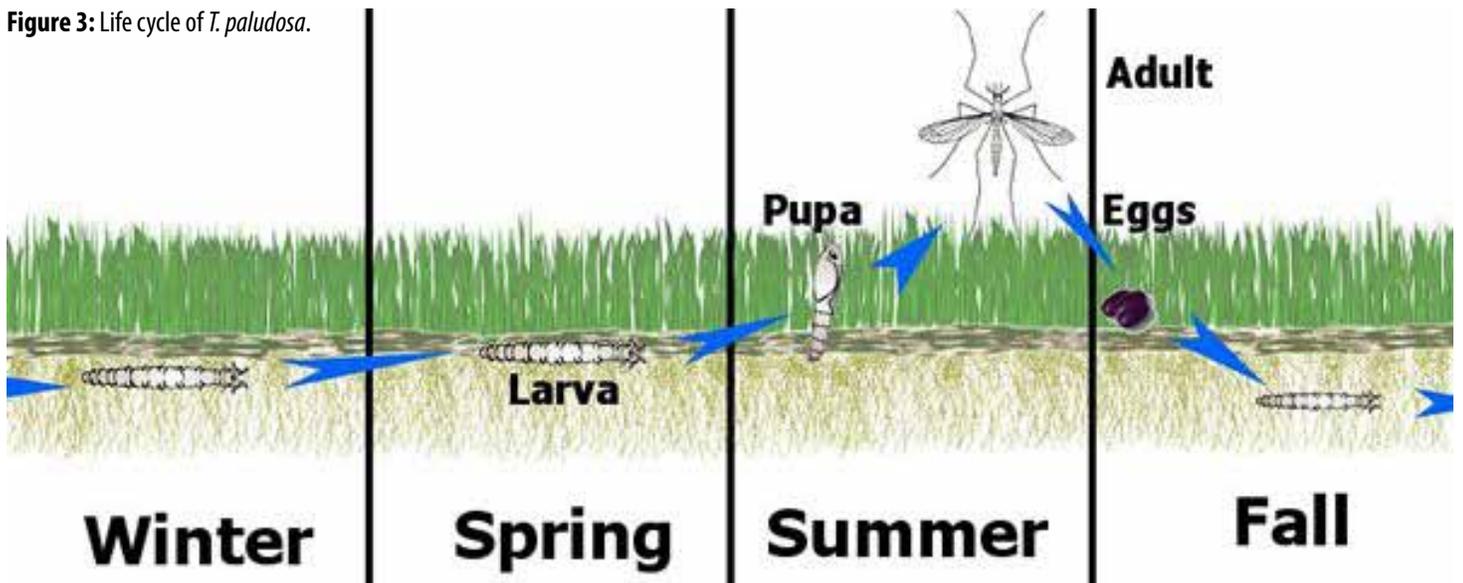


Image credit: Washington State University, Whatcom County Cooperative Extension

To determine if damage can be expected, in early spring remove a section of sod, approximately 15 cm x 15 cm to a depth of up to 5 cm. Submerge this into a solution of saturated common salt and count the larvae that come to the surface after five minutes. If there are more than 5 larvae, you can expect damage to be significant. Repeat this in several places in your field. Apparently gasoline has been used instead of salt, but either way, 5 larvae in a section of sod of this size should be considered the economic threshold.

Now the really bad part; currently there are no pesticides that are registered for the control of leatherjackets in forage grass. First parathion, then diazinon fell to the regulatory “axe” as the Pest Management Regulatory Agency (PMRA) routinely reviews pesticides. Old chemicals, such as the organophosphates, are at risk of not being re-registered in this process. Because chemical manufacturers tend to focus their registration dollars on really big markets (such as wheat and canola), we have found ourselves with no chemical tools available for this specific pest in this specific crop, at all.

TerraLink, in co-operation with other parties, has brought this plight to the attention of both the PMRA and the BC Ministry of Agriculture. We have agreed to work together to do what we can. Until we have another registered pesticide available, here are some things to try should leatherjackets be detected at high levels on your farm:

- Make yourself aware of the problem. Monitor your fields for leatherjackets in early spring and try to estimate the level of infestation.
- Don't plant grass after grass. Rotate grass after corn, or grass after renting your fields out for vegetable production.

- Improve drainage. Crane flies lay their eggs in moist locations. Also, young larvae don't survive as well in dry soils.
- Maintain the health of your new grass stand. Test your soil and apply nutrients as necessary.
- If you must plant grass after grass, and if your soil is suitable, try flip-over plowing as deep as possible. Although not a guarantee, this may bury leatherjacket larvae at a deep level, since they normally feed in the top 3 centimetres.
- You can try biological control with parasitic nematodes such as *Steinernema carpocapsae* and *Heterorhabditis bacteriophora*. Although this is an expensive option, parasitic nematodes (also known as entomopathogenic nematodes or EPN) are increasingly used in turf and lawns for control of leatherjackets.

References:

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